

Wafer suppliers falling short

Strategy Analytics' latest GaAs epitaxial wafer industry study, *SI GaAs Epitaxial Substrates 2004: Vendor Ratings and Customer Satisfaction* concludes that Asia Pacific (excluding Japan) beat the rest of the competition by a considerable margin when it came to wafer pricing.

MBE Technology claimed the top spot in the overall ratings given by end-users to their epi-wafer suppliers, with strong showings on price and other commercial parameters, as well as reasonable scores on technical requirements.

"Despite some exceptional scores in certain categories, the overall performance of epitaxial wafer suppliers has been poor when judged alongside end-user expectations," notes Asif

Anwar, Director, Strategy Analytics GaAs and Compound Semiconductor Technologies service. "The industry delivered on Flatness and Test Data in 2004, however these parameters were low on the list of priorities for the end-user. Epiwafer suppliers failed to meet customer expectations for every other technical and commercial parameter."

"In addition to the 11 technical and commercial parameters considered in this survey, end-users have a host of other areas that are considered when evaluating potential epi suppliers," observed Stephen Entwistle, Vice President, Strategic Technologies Practice. "These include business stability, quality management and past experience."

Meanwhile, according to a companion study on the bulk GaAs wafer industry, *SI GaAs Bulk Substrates 2004: Vendor Ratings and Customer Satisfaction*, Strategy Analytics showed that suppliers were meeting customer expectations in the commercial areas of technical support and complaints, as well as technical requirements for wafer flatness.

However, there still remains a gap between customer expectations and industry performance in areas that end-users consider essential, such as wafer pricing, wafer uniformity, and lot uniformity. Customers rate these qualities highly, and this study shows that bulk substrate suppliers need to work harder to meet these expectations.

"Freiberger Compound Materials (FCM), Hitachi Cable and Sumitomo Electric Industries (SEI) achieved the highest ratings for both technical and commercial parameters," according to Anwar. "While there was no discernible difference in the technical ratings achieved by the top three, FCM was the clear leader in terms of commercial parameters."

"Being the market leader in terms of commercial output doesn't necessarily translate to offering best-in-class customer service," observed Entwistle. "In the case of SEI, the company is able to keep its primary customers very happy, but this appears to be at the expense of smaller customers, and this drags SEI down in terms of overall ratings."

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Equipment market to fall 11% in 2005

At its SEMICON Japan show, trade organization SEMI released its year-end Capital Equipment Consensus Forecast.

After robust 67% growth in 2004, in 2005 the equipment market will fall 11.2% to \$32.95bn. Survey respondents see single-digit growth in 2006 before resuming double-digit growth over the following two years, reaching \$46.63bn in 2008.

"Capital spending in 2005 reflects an anticipated cyclic decline following the very high investment levels of the prior year. However, this remains the third-strongest year for worldwide semiconductor equipment sales," said SEMI's President and CEO Stanley Myers. "SEMI members expect the equipment market to continue posting sequential gains over the next three

years as chipmakers continue to invest in 300 mm fabs and 65 nm technology."

In 2005, the final manufacturing equipment segments will fall the most. Respondents anticipate shrinkage in assembly and packaging equipment by 19% to \$1.99bn and in semiconductor test equipment by 17% to \$5.27bn. Wafer processing equipment, the largest segment

by value, is expected to fall almost 10% to \$22.97bn.

The Japanese market, which grew more than 49% in 2004, remains the largest region, with \$8.04bn of new equipment sold in 2005. But South Korea is the only region that is growing (at almost 28%). Sales in China and the Rest-of-World will decline 54% and 35%, respectively.

www.semi.org

Table. SEMI's annual capital equipment consensus sales forecast (in \$bn), by equipment type and region.

Equipment	2004	2005	%	2006	%	2007	%	2008	%
Wafer processing	\$25.45	\$22.97	-9.7%	\$24.52	6.8%	\$27.82	13.5%	\$32.70	17.5%
Assembly & packaging	2.46	1.99	-19.1%	2.17	9.4%	2.40	10.7%	2.73	13.4%
Test	6.37	5.27	-17.1%	6.23	18.1%	6.77	8.7%	7.50	10.8%
Other	2.84	2.73	-3.6%	3.05	11.6%	3.40	11.7%	3.70	8.8%
Total	\$37.11	\$32.95	-11.2%	\$35.97	9.1%	\$40.40	12.3%	\$46.63	15.4%
Region	2004	2005	%	2006	%	2007	%	2008	%
North America	\$5.81	\$5.79	-0.3%	\$6.24	7.7%	\$6.79	8.9%	\$7.72	13.6%
Japan	8.27	8.04	-2.8%	8.58	6.7%	9.55	11.3%	10.67	11.7%
Taiwan	7.76	5.88	-24.3%	6.57	11.9%	7.67	16.7%	9.09	18.5%
Europe	3.44	3.19	-7.4%	3.28	2.7%	3.56	8.5%	3.92	10.1%
South Korea	4.61	5.89	27.8%	6.36	7.9%	7.05	10.9%	8.18	16.1%
China	2.73	1.24	-54.1%	1.57	26.8%	1.98	26.6%	2.55	28.3%
Rest of World	4.49	2.92	-35.0%	3.37	15.4%	3.79	12.5%	4.50	18.8%
Total	\$37.11	\$32.95	-11.2%	\$35.97	9.1%	\$40.40	12.3%	\$46.63	15.4%